

WHAT IS CLAIMED IS:

1. A filter head adapted to mount a filter between an upstream fluid supply and a downstream fluid pump, the filter head comprising:

a filter head housing having an inlet port and an outlet port, the filter head having a filter mounting stub adapted to mount the filter thereto, the filter mounting stub defining a filter head entrance port and a filter head exit port between the inlet and the outlet ports for communication with the filter;

a valve closure element interposed between the inlet and the outlet ports having open and closed positions, the valve closure element being biased by a spring element to a closed position; and

a valve actuator arranged to open the valve closure element against the spring element in response to vacuum pressure between the valve closure element and the outlet port.

2. The filter head of claim 1, wherein the valve closure element is arranged between the filter head entrance port and the outlet port.

3. The filter head of claim 2, wherein the filter mounting stub includes an annular flange and a central hub coaxially contained therein about a filter mounting axis, the central hub surrounding the filter entrance, the filter head exit port being defined radially between the annular flange and the central hub, further comprising an axial passage along the axis connecting the filter head entrance port with a transverse passage leading to the outlet port, and wherein the valve closure element is disposed in the axial passage.

4. The filter head of claim 3, wherein the inlet and outlet are arranged transversely relatively to the filter mounting axis.

5. The filter head of claim 1, wherein the filter head housing comprises a body and a cover plate, the body defining a valve chamber and defining each of the inlet and outlet ports and each of the filter entrance and exit ports all in a single unitary cast member.

6. The filter head of claim 5, further comprising an outlet vacuum gauge port defined in the body fluidically between the valve closure element and the outlet port.

7. A filter head adapted to mount a filter between an upstream fluid supply and a downstream fluid pump, the filter head comprising:

a filter head housing having an inlet port and an outlet port, the filter head having a filter mounting stub adapted to mount the filter thereto, the filter mounting stub defining a filter head entrance port and a filter head exit port between the inlet and the outlet ports for communication with the filter; and

a safety valve mounted in the filter head housing arranged fluidically between the inlet port and the outlet port, the safety valve having closed and open positions, the safety valve opening in response to vacuum pressure at the outlet port.

8. The filter head of claim 7, wherein the safety valve includes: a valve closure element movable toward and away from a valve seat, means for biasing the valve closure element against the valve seat, and means responsive to vacuum pressure at the outlet port for actuating the valve closure element away from the valve seat.

9. The filter head of claim 8, wherein the valve closure element is arranged between the filter head entrance port and the outlet port.

10. The filter head of claim 9, wherein the filter mounting stub includes an annular flange and a central hub coaxially contained therein about a filter mounting axis, the central hub surrounding the filter entrance, the filter head exit port being defined radially between the annular flange and the central hub, further comprising an axial passage along the axis connecting the filter head entrance port with a transverse passage leading to the outlet port, and wherein the valve closure element is disposed in the axial passage.

11. The filter head of claim 10, wherein the inlet and outlet are arranged transversely relatively to the filter mounting axis.

12. The filter head of claim 7, wherein the filter head housing comprises a body and a cover plate, the body defining a valve chamber receiving the safety valve and defining each of the inlet and outlet ports and each of the filter entrance and exit ports all in a single unitary cast member.

13. The filter head of claim 7, further comprising an outlet vacuum gauge port defined in the filter head housing fluidically between the safety valve and the outlet port.

14. The filter head of claim 13, further comprising visual indicating means for indicating whether the safety valve is open or closed.

15. An oil burner system, comprising:

- a oil tank containing fuel oil;
- an oil burner having a combustion chamber arranged downstream of the oil tank, and an oil pump adapted to pump fuel to the combustion chamber; and
- a filter head interposed between the oil tank and the oil burner, the filter head connected by an upstream network to the oil tank and to the oil pump via a downstream network, the filter head including:
  - (a) a filter head housing having an inlet port and an outlet port, the filter head having a filter mounting stub having an oil filter mounted thereto, the filter mounting stub defining a filter head entrance port and a filter head exit port between the inlet and the outlet ports for communication with the filter, the oil filter adapted to filter and communicate oil from the filter head entrance port to the filter head exit port; and
  - (b) a safety valve mounted in the filter head housing arranged fluidically between the inlet port and the outlet port, the safety valve having closed and open positions, the safety valve opening in response to vacuum pressure at the outlet port.

16. The oil burner system of claim 15, wherein the safety valve includes: a valve closure element interposed between the inlet and the outlet ports having open and closed positions, the valve closure element being biased by a spring element to a closed position; and a valve actuator arranged to open the spring element against the spring element in response to vacuum pressure between the valve closure element and the outlet port.

17. The filter head of claim 16, wherein the valve closure element is arranged between the filter head entrance port and the outlet port.

18. The filter head of claim 17, wherein the filter mounting stub includes an annular flange and a central hub coaxially contained therein about a filter mounting axis, the hub surrounding the filter entrance, the filter head exit port being defined radially between the annular flange and the central hub, further comprising an axial passage along the axis connecting the filter head entrance port with a transverse passage leading to the outlet port, and wherein the valve closure element is disposed in the axial passage.

19. The filter head of claim 18, wherein the inlet and outlet are arranged transversely relatively to the filter mounting axis.

20. The filter head of claim 15, wherein the filter head housing comprises a body and a cover plate, the body defining a valve chamber for receiving the safety valve and defining each of the inlet and outlet ports and each of the filter entrance and exit ports all in a single unitary cast member.

21. The filter head of claim 15, further comprising an outlet vacuum gauge port defined in the filter housing fluidically between the safety valve and the outlet port.

22. A filter head adapted to mount a filter between an upstream oil supply and a downstream oil pump in an oil burner system, the filter head comprising:

a filter head housing including a cover plate and a filter head body, the filter head body providing a filter mounting stub for mounting the filter, the filter mounting stub including an annular flange and a threaded central hub coaxially contained therein about a filter mounting axis, the threaded hub defining a filter head entrance port, an annular shaped filter head exit port being defined radially between the annular flange and the central hub, the filter head body further defining an inlet port, an outlet port, an actuation chamber, a first axial passage along the axis to connect the filter inlet port with the actuation chamber, a second axial passage offset from the axis to connect the inlet port with the filter head exit port, and a transverse passage extending transverse relative to the axis to connect the actuation chamber with the outlet port, the cover plate enclosing the actuation chamber;

a valve assembly mounted in the axial passage comprising a valve seat element mounted in the axial passage, a valve closure element disposed in the axial passage, and the spring element biasing the valve closure element axially away from the threaded hub against the valve seat to close the axial passage; and

a valve actuator assembly mounted in the actuator chamber comprising a flexible diaphragm, a spring means and an actuating stem, the actuating stem being axially aligned with the valve closure element and being carried by the diaphragm, the spring means biasing the actuating stem away from the valve closure element, the diaphragm being retained between the cover plate and the filter head body and separating the actuator chamber into an ambient side and an a working side, wherein a predetermined magnitude of vacuum pressure experienced in the actuation chamber on the ambient side drives the diaphragm and actuator stem axially to strike the valve closure element and open the axial passage.